

County Clinton

sec. 13 T. 55 R. 32

Owner King, C.E.

Elev. 960.35 MGS# 5480
(Derrick floor)

Farm Willis

No. 1

TD 1886

Shows org

Spls. V

Status _____

Date

Completed 4-27-39

Fm@TD Everton

Remarks:

00007
00004

RECENT DRILLING

in

NORTHWESTERN MISSOURI

By
FRANK C. GREENE



REPORT OF INVESTIGATIONS NO. 1

1945

EDWARD L. CLARK, *Director and State Geologist*
MISSOURI GEOLOGICAL SURVEY AND
WATER RESOURCES
ROLLA, MISSOURI

Log of C. E. King, *et al* No. 1 Willis. Location: 950 feet north and 560 feet west of the southeast corner of sec. 13, T. 55 N., R. 32 W., Clinton County, Missouri, near Plattsburg. Elevation (of derrick floor), 960 feet (P.T.). Commenced, 4-27-1939, and completed, about 7-12-1939. Total depth, 1886 feet. Dry and abandoned. Drilled with cable tools. Casing record: 10 inch set at 419 feet; 8 inch at 716 feet; and 6 5/8 inch at 1355 feet. Contractor: H. H. Sherman, Iola, Kansas.

FORMATIONAL SUMMARY

	Thickness, feet	Depth, feet
Pennsylvanian system:		
Lansing group	120	120
Kansas City group	180	300
Pleasanton group	160	460
Henrietta group	60	520
Cherokee group	476	996
Mississippian system:		
Ste. Genevieve (?) formation	10	1006
No samples	10	1016
St. Louis formation	20	1036
Spergen-Upper Warsaw formations	27	1063
Warsaw formation	47	1110
Keokuk-Burlington formations	142	1252
Chouteau formation (includes an oolitic limestone in the basal 15 feet)	99	1351
Kinderhook shale	43	1394
Devonian system ("Hunton")	246	1640

Ordovician system:

	Thickness, feet	Depth, feet
Kimmswick formation	137	1777
St. Peter formation	77	1854
Everton (?) formation	32	1886, T.D.

NOTE: When this hole was thought to be 1332 feet, a steel line measure showed an actual depth of 1355 feet. The formation thicknesses between 716 and 1355 feet have been adjusted to distribute the error in the above summary, but were not made in the samples.

WATER ANALYSES

Horizon	T.D.S.	Cl.	SO ₄	Na+K as Na
Basal Kansas City at 250-276 ft.	6578.0	3671.4	19.8	2596.4
Upper Cherokee, 585-589 ft.	11141.0	6272.1	0.8	4374.6
Mississippi, 985-988 ft.	15182.0	8471.9	23.2	5486.0
Mississippian (top of "Huntton"), 1394-1398 ft.	8590.0	4301.9	673.8	3035.1
Devonian (lower) 1630-1633 ft.	10711.0	4706.3	1337.0	3334.1
St. Peter, 1868-1873 ft.	9789.0	4706.3	751.0	3174.7

SAMPLE LOG

Pennsylvanian system:

Lansing group:

	Thickness, feet	Depth, feet
Shale, black, carbonaceous with some limestone fragments	10	10
Limestone, tan, oolitic, highly fossiliferous. Residue, less than 10 percent by volume, of porous silica, fossil fragments and foraminiferal fragments	10	20
Limestone, gray, shaly. Residue, 10 percent, of fine-grained sand, gray silica and shale	10	30
Limestone, gray to tan, highly fossiliferous with brachiopods and crinoid fragments. Residue, 10 percent, of gray shale, spines and sand grains	10	40
Shale, gray, sandy, micaceous with some calcareous fossils and plant remains. Calcareous zones occur between 40-50 feet, 60-70 feet, and 100-120 feet. Residue, 30 to 50 percent, of sandstone and shale	80	120

Kansas City group:

Limestone (Raytown), tan, fine-grained, fossiliferous		
Residue, 15 percent, of gray, porous to dense, spinose chert	10	130
Shale black, carbonaceous and gray, calcareous with fossil fragments. Residue, 20 percent, of black shale, pyrite and gray shale	10	140
Shale, green to gray with calcareous fossils and limestone nodules	20	160
Limestone, light gray, medium-grained, fossiliferous. Residue, less than 10 percent, of fine sand and white clay	10	170
No samples	10	180
Shale, black and gray with some crinoid stem fragments. Residue, 20 percent, of black shale, silicified microfossils and pyrite	10	190
Limestone, tan to light brown, crystalline, fossiliferous. Residue, 10 percent, of fine sand grains, silicified spines and foraminifera and pyritized shell fragments	20	210
Shale, gray with siderite nodules and some calcareous fossils, chiefly ostracods. Residue, 50 percent, of gray shale	10	220

Thickness,
feetDepth,
feet

Limestone (Winteret), light tan, fine-grained to dense, sparingly fossiliferous. Residue, 10 to 15 percent, of tan chert, kaolinized fossils, quartz and angular sand grains	30	250
Shale, black, carbonaceous	2	252
Limestone (Bethany Falls), tan, fine-grained and in the upper part, slightly oolitic. Slightly oil stained in upper 10 feet. Residue, less than 10 percent, of beekites, kaolin balls, caved black shale and sand grains	22	274
Shale, black, carbonaceous. Residue, of black shale	2	276
Limestone (Hertha), white, granular to finely crystalline, sparingly fossiliferous. Residue, very small, less than 10 percent, of fine sand, kaolin and silicified crinoids	24	300
Pleasanton group:		
Shale, gray, slightly calcareous, sandy with sand content increasing toward base	30	330
Sand, medium coarse, angular grains with limestone cement and lentils. Residue, 30 percent, of sand, as above	10	340
Shale, gray, soft, non-calcareous but with some thin limestone beds in lower 10 feet	40	380
Shale, red, calcareous	10	390
Sand, medium fine, angular grains, calcareous with some fossil fragments	10	400
Shale, gray and green, slightly sandy in upper 10 feet and with some siderite or "ironstone" nodules between 410-420 feet	30	430
Shale, light gray with some calcareous fossils	10	440
Shale, and sand: shale, brown, silty; and sand, medium fine, angular grains. Slight oil stained	10	450
Shale, gray, soft	10	460
Henrietta group:		
Limestone, brown, shaly and sandy. Residue, 30 percent, of angular sand and mica	10	470
Limestone, as above, with black, carbonaceous shale. Residue, 50 percent, of black shale, pyritized microfossils and angular sand grains	10	480
Shale and coal (Lexington?): shale, gray; and coal, thin, bituminous, shaly. Residue, 30 percent, of black shale and coal	10	490
Shale, gray with thin beds of fossiliferous limestone	10	500
Limestone (Fort Scott?), brown in upper part and light tan to white at base, fine-grained, fossiliferous. A bed of black carbonaceous shale occurs between 500-510 feet. Residue, 10 to 15 percent, of gray shale and silicified foraminiferal and ostracod fragments	20	520
Cherokee group:		
Shale, gray with pyrite and siderite concretions	20	540
Sand, fine, angular grains with mica flakes	10	550
Shale and sand: shale, black, carbonaceous interbedded with lenses of micaceous sandstone	20	570
Shale, gray, slightly sandy with thin coal seams between 570-575 feet and 580-585 feet	30	600
Shale, black, carbonaceous with some coal and "clay ironstone" concretions	10	610
Limestone, brown, argillaceous, fossiliferous. Residue, 10 percent, of gray shale, kaolinized fossil fragments and silicified spines	10	620

	Thickness, feet	Depth, feet
Shale, gray, sandy with some "clay ironstone" or siderite cement and nodules	10	630
Shale, gray with nodules of siderite	10	640
Shale and limestone containing a thin coal seam	10	650
Shale, gray with plant remains and many small spherulites of siderite	40	690
Shale, gray, sandy with some nodules of "clay ironstone" or siderite	10	700
Shale, gray, slightly sandy toward base, with small spherulites of siderite	30	730
Sand and shale interbedded: shale, gray, micaceous; and sand, fine-grained, argillaceous. One thin coal seam occurs between 730-740 feet	80	810
Shale and sandstone, as above, interbedded with black carbonaceous shales. A thin coal seam occurs between 830-840 feet	30	840
Shale and sandstone: shale, gray; and sandstone, fine-grained, thin-bedded micaceous	45	885
Shale, black, carbonaceous, platy with some dark brown "clay ironstone" or siderite nodules	75	960
Sand, fine-grained, argillaceous with a thin coal seam between 970-975 feet	20	980

Mississippian system:

St. Genevieve (?) formation:

Sandstone, medium coarse-grained with calcareous cement and a small amount of quartzose chert and gray siliceous rosettes. Residue, nearly 90 percent by volume	10	990
No samples	10	1000

St. Louis formation:

Limestone, tan, dense to sub-lithographic, fossiliferous. Residue, very small, less than 10 percent, of quartzose rosettes and fine-grained angular sand	19	1019
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Spergen or Upper Warsaw formation:

Limestone, crystalline, highly fossiliferous with very small fossils including <i>Endothyra</i> . Residue, 10 to 20 percent, of red chalcadonic, fossiliferous chert and pyrite	26	1045
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Warsaw formation:

Dolomitic limestone, tan to gray, fine-grained crystalline. Residue, 35 percent, of gray to white, mottled, fossiliferous chert	8	1053
Limestone, white, coarsely crystalline, crinoidal. Residue, 10 to 60 percent (averaging 40 percent), of mottled, crinoidal, dense to rough chert	37	1090

Keokuk-Burlington formations:

Limestone, light tan to white, medium fine-grained crystalline with crinoids and brachiopod fossils. Some glauconite occurs at 105 and 110-140 feet. Residue, 30 to 40 percent, of white, dense, flaky, crinoidal, and in part, drusy chert	72	1162
Dolomitic limestone and dolomite, white, medium fine-grained crystalline. Residue, 10 percent, of white, flaky chert with some sand grains	10	1172
Dolomitic limestone and chert: dolomitic limestone, finely crystalline, porous. Residue, 50 to 60 percent, of white, dense, flaky chert with some drusy cavities and some crinoidal chert	32	1204
Limestone, white, crystalline with brachiopods and crinoid fossils. Residue, 30 percent of white, rough chert, quartzose chert and silicified brachiopods	22	1226

	Thickness, feet	Depth, feet
Chouteau formation:		
Dolomitic limestone, dark gray, fine-grained crystalline, porous, cherty. Residue, 20 to 50 percent, of gray, porous to dense chert	31	1257
Limestone, tan to gray, dense, fossiliferous, in part, residue, very small, less than 10 percent, of pyrite, brown and tan, porous shale and a trace of chert with some sand in the residue from the basal 5 feet	50	1307
Limestone, brown (possibly oil stained in part), oolitic and sandy. Limestone composed of large circular, brown oolites. Contains green, sandy lenses and some conodonts. Residue, 25 to 40 percent, of rounded and frosted sand, green shale, and pyrite	16	1323
Kinderhook shale (unfossiliferated):		
Shale, green, soft with black spores. Residue, same as original sample	9	1332

NOTE: A steel line measurement, made when the recorded depth was 1332, showed the true depth of the hole to be 1355 feet. No correction has been made but the interval from 1332 to 1355 feet will have to be adjusted in the beds above 1332 feet.

Correction interval

Shale, green with black spores	23	1355
	5	1360

Devonian system:

Shale, red and green	34	1394
Dolomite, cream, finely granular and crystalline. Residue, about 10 percent, of fine sand	4	1398
Dolomite, as above with white, finely crystalline limestone. Residue, as above	6	1404
Limestone, tan-gray, dense. Residue, very small, of green shale and sand grains	76	1480
Limestone, gray, finely crystalline to tan, dense. Residue, less than 10 percent, of tan, coralline chert	15	1495
Limestone, gray, very finely crystalline to dense. Residue, very small, of green shale and fine sand	11	1506
Limestone, brown, dense to lithographic	5	1511
Limestone, gray, dense to lithographic. Residue, very small, of green shale	24	1535
Limestone, tan, mottled, finely crystalline to granular	5	1540
Dolomite, brown, finely crystalline. Residue, less than 10 percent, of gray quartzose chert	13	1553
Limestone, gray, dense to tan, lithographic. Residue, less than 10 percent, of gray and white chert with some chalcadonic oolite	24	1577
Dolomite, cream-brown, finely crystalline. Residue, less than 10 percent, of brown, quartzose chert and pyrite	13	1590
Limestone, gray, dense. Residue, very small, of fine sand	10	1600
Dolomite, brown, coarsely crystalline	2	1602
Dolomite, gray, dense and finely crystalline. Residue, less than 10 percent, of rounded sand and translucent chert	20	1622
Limestone, tan, dense to lithographic	11	1633
No sample (cavern, 1636-1638 feet)	5	1638
Limestone, white, very finely crystalline	2	1640

Ordovician system:

Kimmewick formation:

Limestone, gray, dense. Residue, averages 80 percent, of chert which is smooth, gray and white and contains dark specks	29	1669
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	<i>Thickness, feet</i>	<i>Depth, feet</i>
Dolomite, cream-gray, finely crystalline. Residue, about 10 percent, of tan and white chert and sand grains	9	1678
Dolomite, cream-gray, finely crystalline. Residue, about 50 percent, of white and gray, smooth chert, dolocastic with dark specks and some very small silicified crinoid segments	45	1723
Dolomite, as above. Residue, about 10 percent, as above	3	1726
No samples (cavern, 1726-1749 feet)	23	1749
Dolomite, tan-gray (sample ground to a powder). Oil show (?)	20	1769
Dolomite, cream, crystalline. Residue, less than 10 percent, of chert and sand grains	8	1777
St. Peter formation:		
Sand, white, medium to coarse	53	1830
Shale, green with sand	5	1835
Sand, coarse, rounded, frosted	19	1854
Everton (?) formation:		
Dolomite, cream, finely granular to dense	32	1886, T.D.